

FIG. 1a

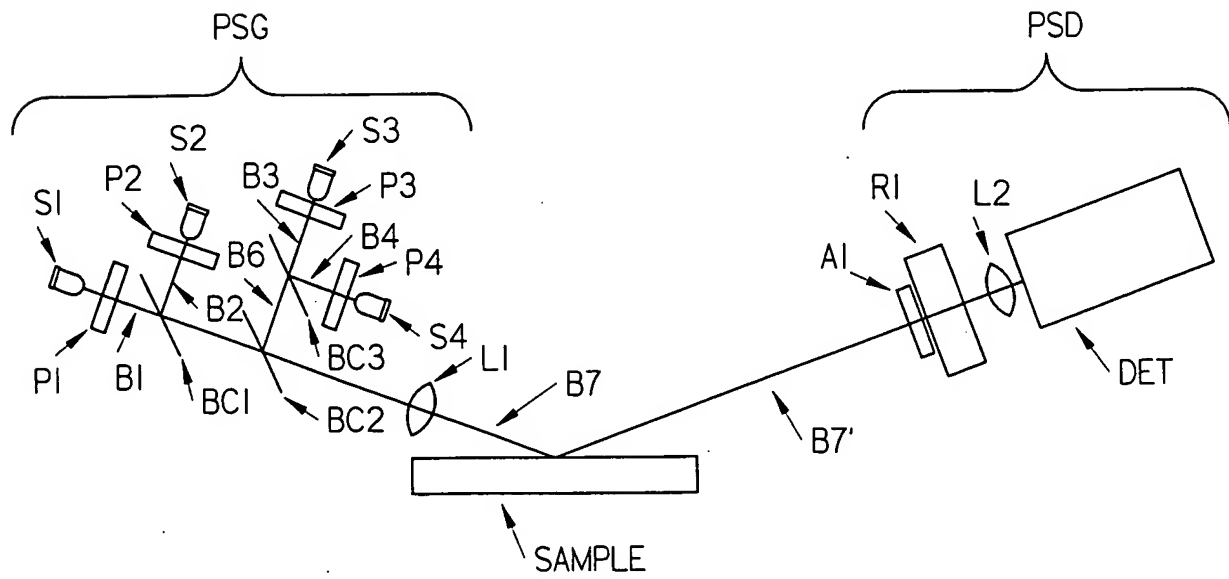


FIG. 1b

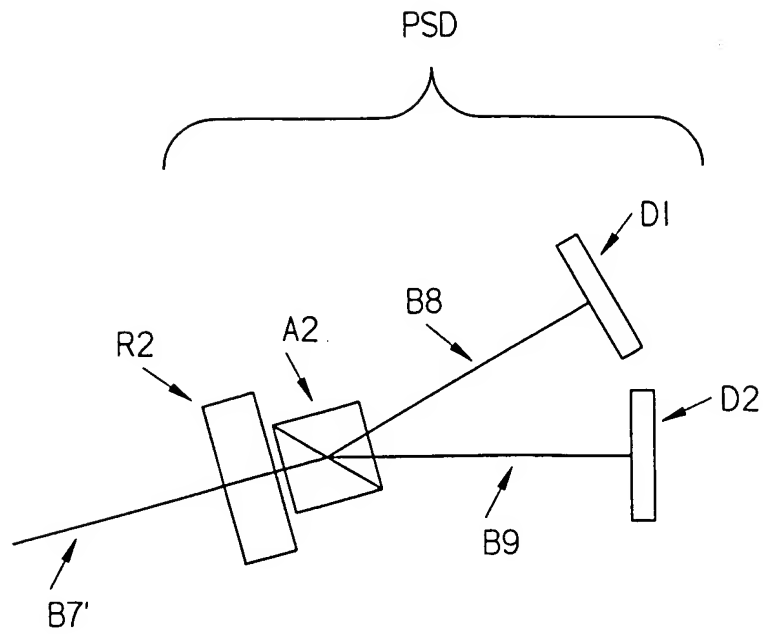


FIG. 1c

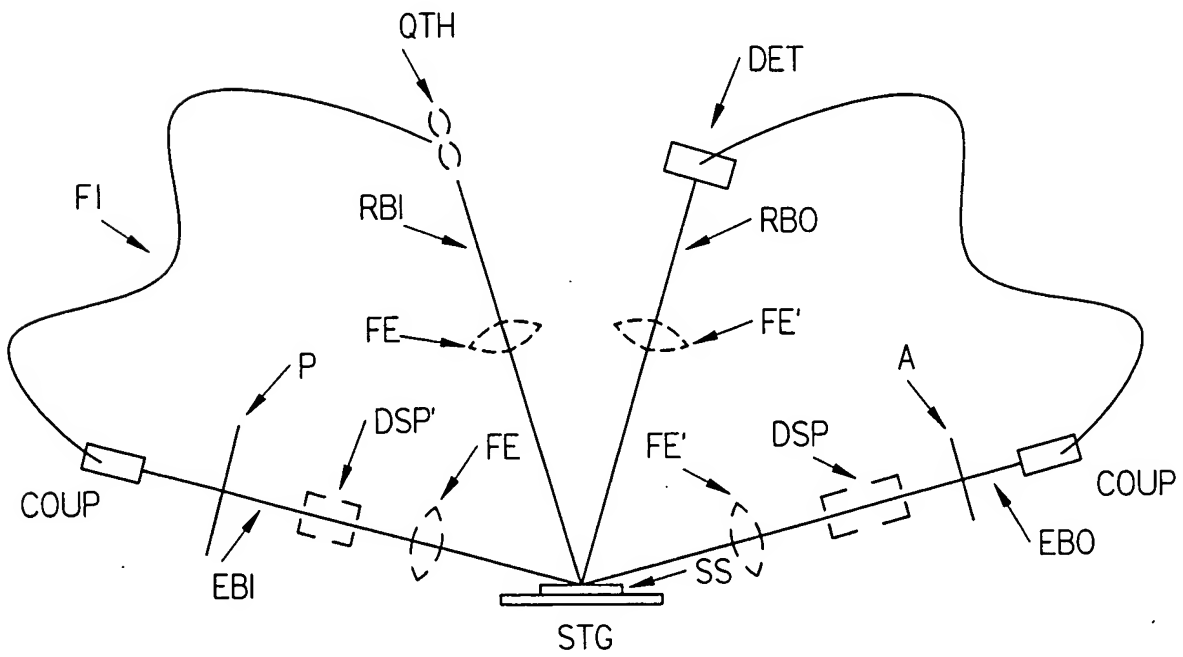


FIG. 2a

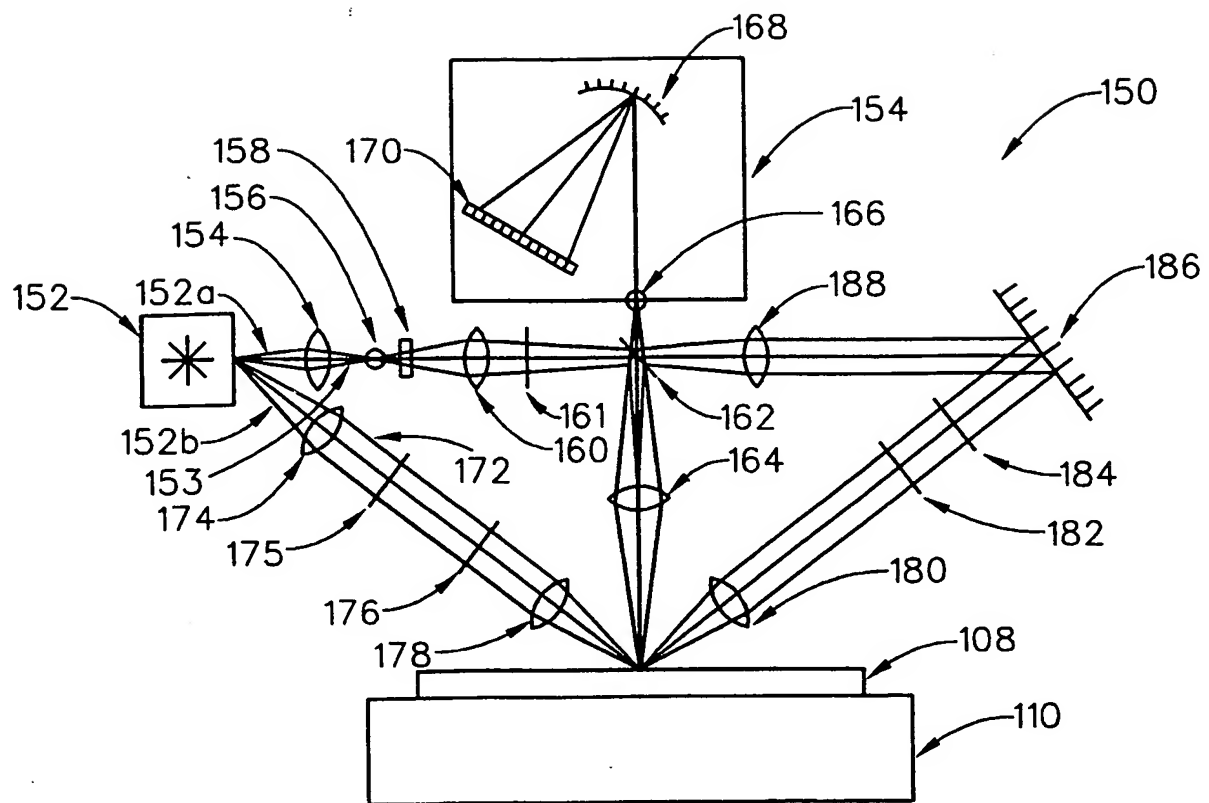
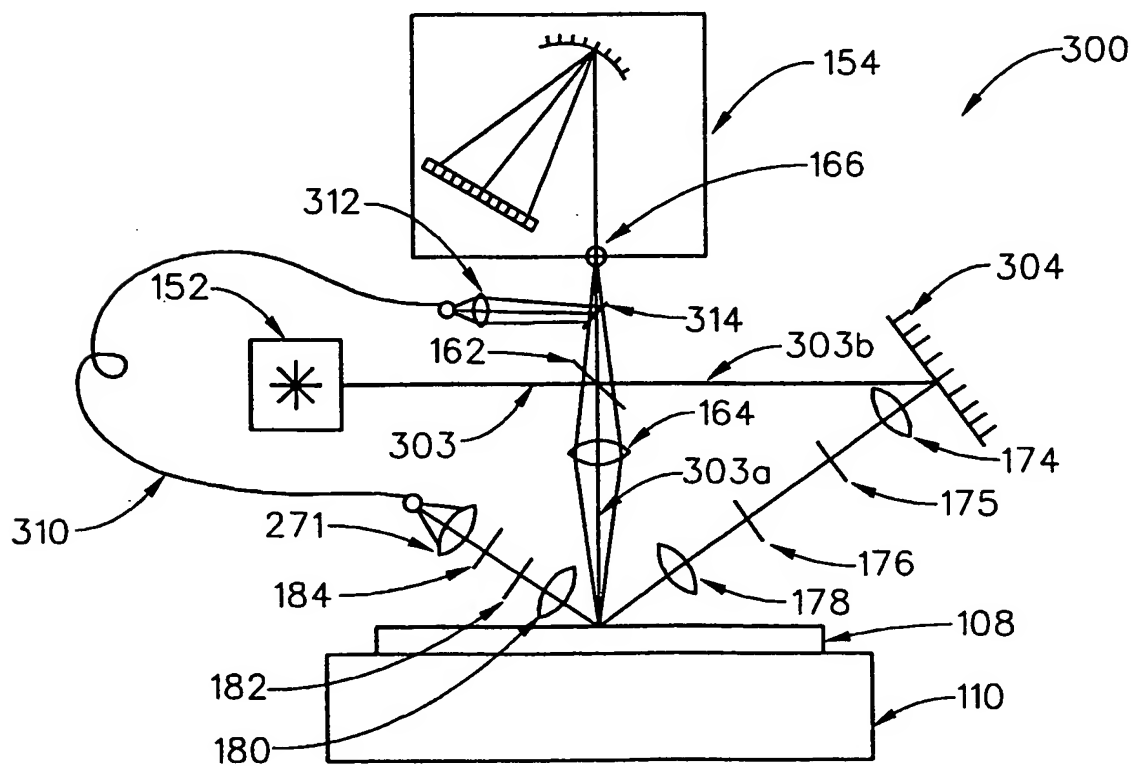
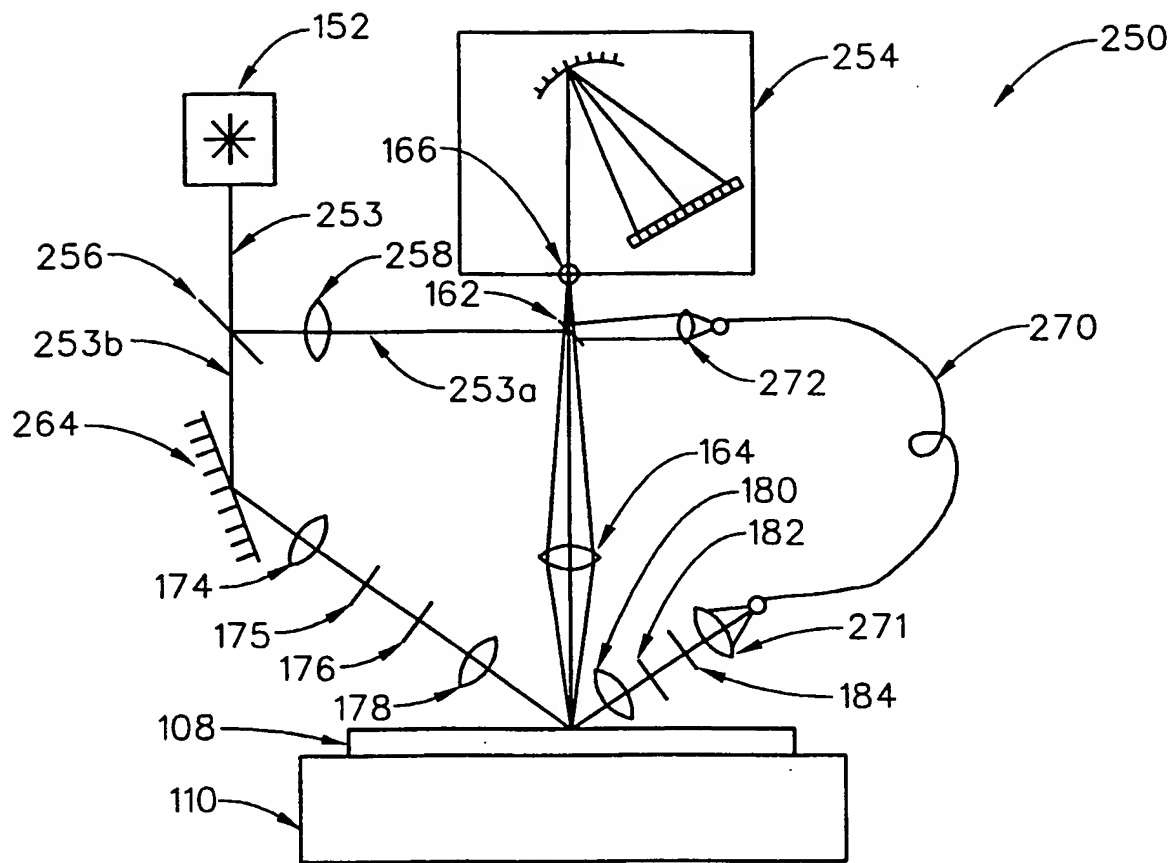


FIG. 2b



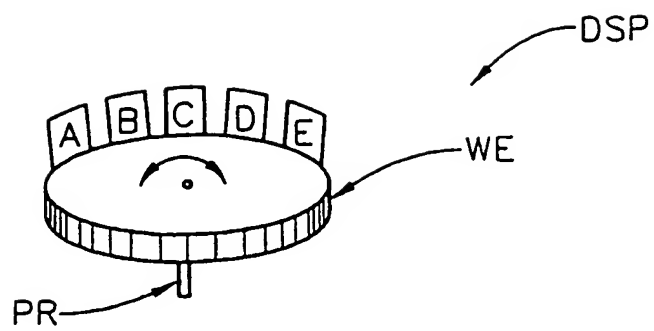


FIG. 3a

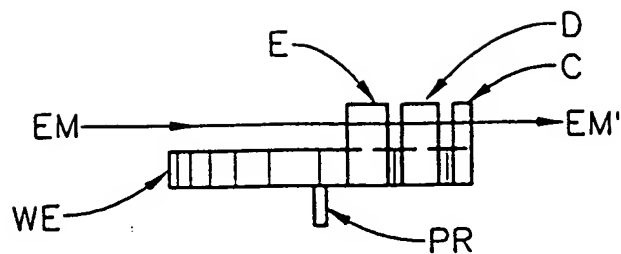


FIG. 3b

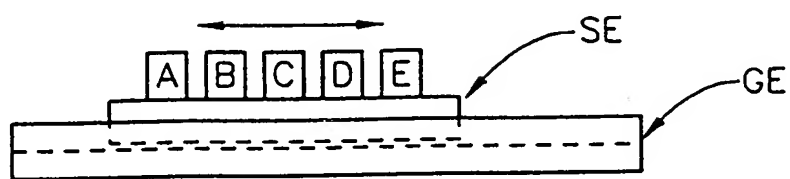


FIG. 3c

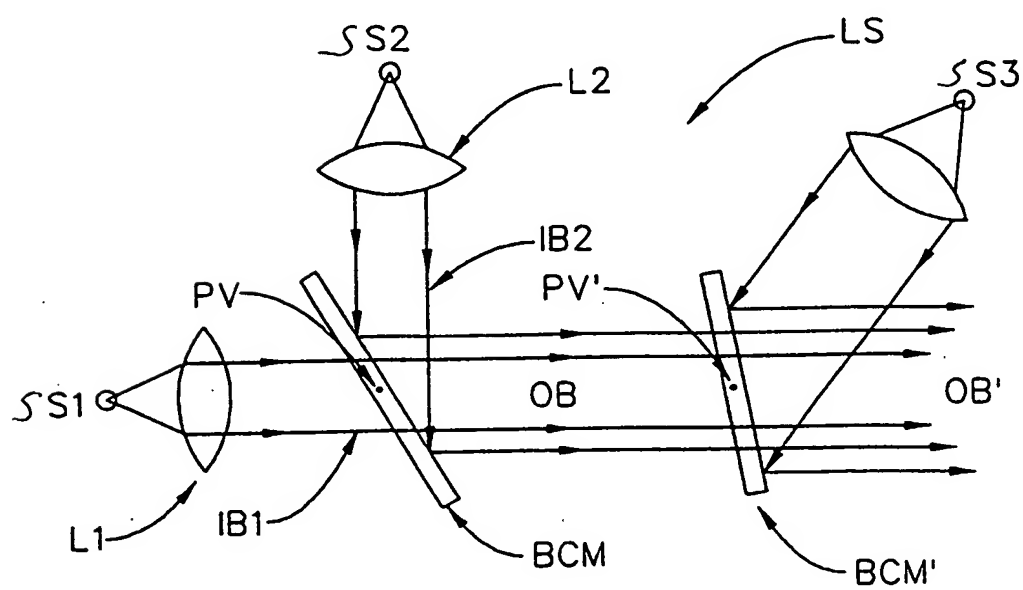


FIG. 3d1

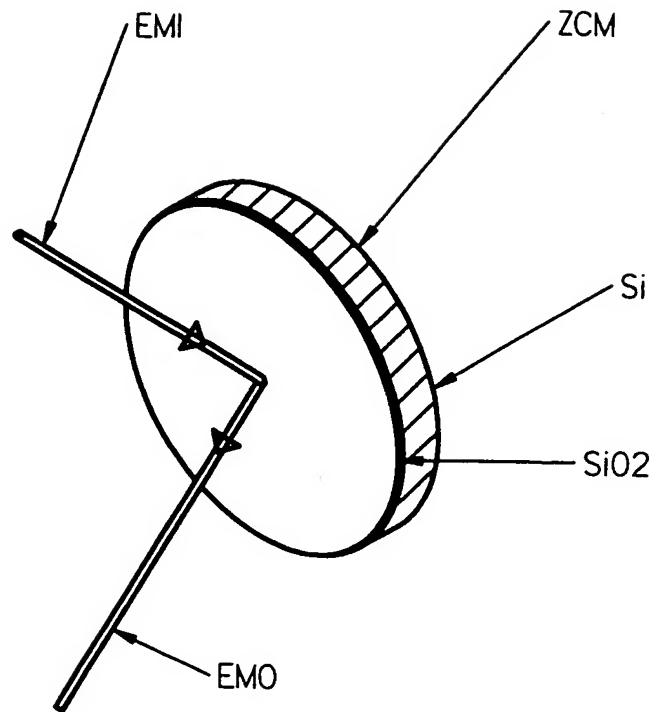


FIG. 3d2

Spectrum of SE with and without 1200Å SiO<sub>2</sub>/Si Mirror

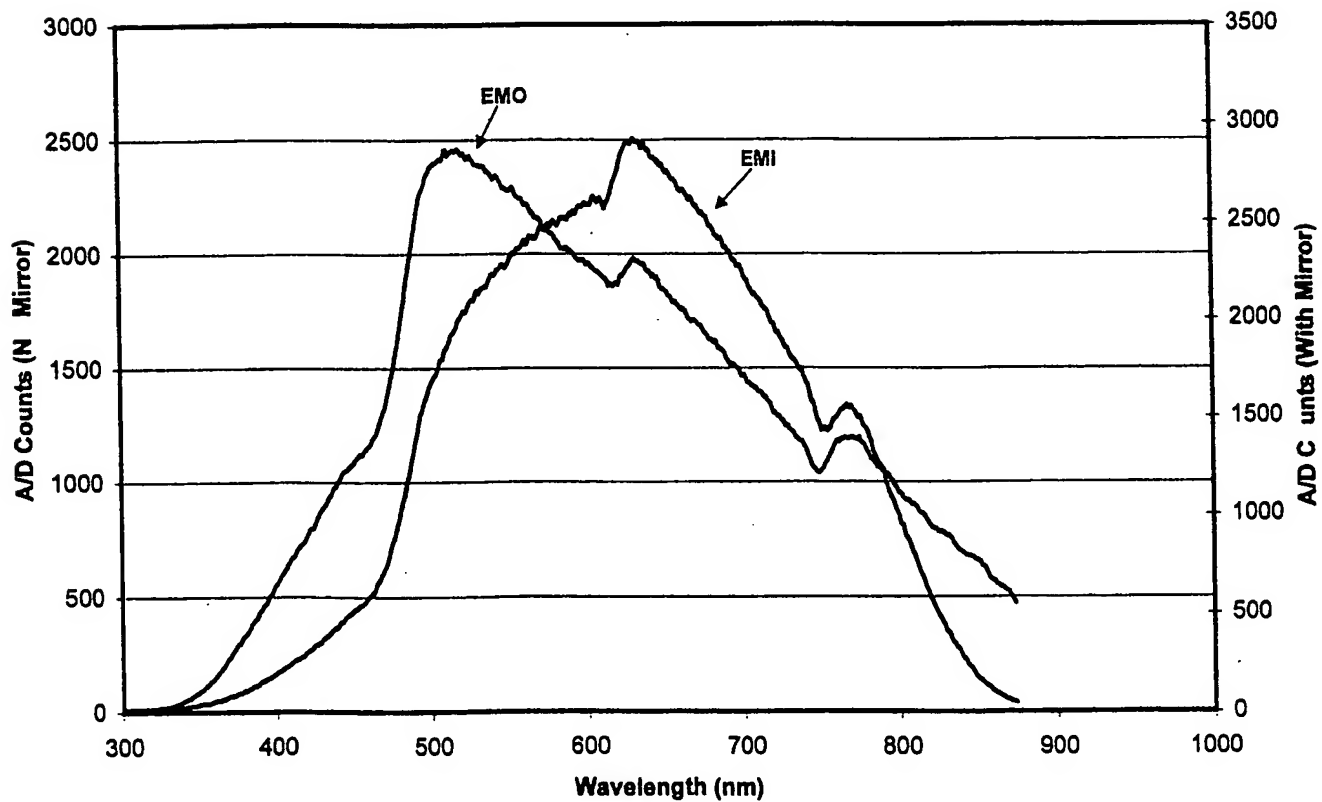


FIG. 3d3

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Providing a sample system investigation system comprising:

- a) a plurality of electromagnetic radiation sources, each thereof optionally having polarization state setting means functionally associated therewith;
- b) a means for accepting at least two electromagnetic beams which approach along different loci, and providing an electromagnetic beam which exits therefrom along a single locus;
- c) a stage for supporting a sample system;
- d) at least one detector system;
- e) computation means;

said at least first means for accepting at least two electromagnetic beams which approach along different loci, and providing an electromagnetic beam which exits therefrom along a single locus, being positioned with respect to at least two of said plurality of sources of electromagnetic radiation such that a beam of electromagnetic radiation from either thereof, when it is energized, enters therein and emerges therefrom along a locus which is directed toward a sample system placed on said stage for supporting a sample system; said at least one detector system being positioned to intercept a beam which emerges from the sample system on said stage for supporting a sample system after said beam interacts therewith.

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Sequentially energizing at least two of said sources of electromagnetic radiation and accumulating data from said at least one detector system.

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Providing a mathematical model of the sample system and by simultaneous mathematical regression onto said data sets, evaluating parameters in said mathematical model.

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FIG. 4a

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Providing a spectroscopic ellipsometer system comprising:  
a) a plurality of electromagnetic radiation sources, each thereof optionally having polarization state setting means functionally associated therewith;

b) a means for accepting at least two electromagnetic beams which approach along different loci, and providing an electromagnetic beam which exits therefrom along a single locus;

c) a stage for supporting a sample system;

d) at least one detector system;

e) computation means;

said at least first means for accepting at least two electromagnetic beams which approach along different loci, and providing an electromagnetic beam which exits therefrom along a single locus, being positioned with respect to at least two of said plurality of sources of electromagnetic radiation such that a beam of electromagnetic radiation from either thereof, when it is energized, enters thereinto and emerges therefrom along a locus which is directed toward a sample system placed on said stage for supporting a sample system; said at least one detector system being positioned to intercept a beam which emerges from the sample system on said stage for supporting a sample system after said beam interacts therewith.

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For each of at least two ellipsometrically distinguished sample systems, obtaining at least one multi-dimensional data set comprising intensity as a function of wavelength and as a function of a plurality of polarization states of a beam of electromagnetic radiation sequentially provided by said plurality of sources of polychromatic electromagnetic radiation.

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Providing a mathematical model of the ellipsometer system, including provision for accounting for the polarization state of a beam of electromagnetic radiation provided by said sources of polychromatic electromagnetic radiation utilized.

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By simultaneous mathematical regression onto said data sets, evaluating parameters in said mathematical model.

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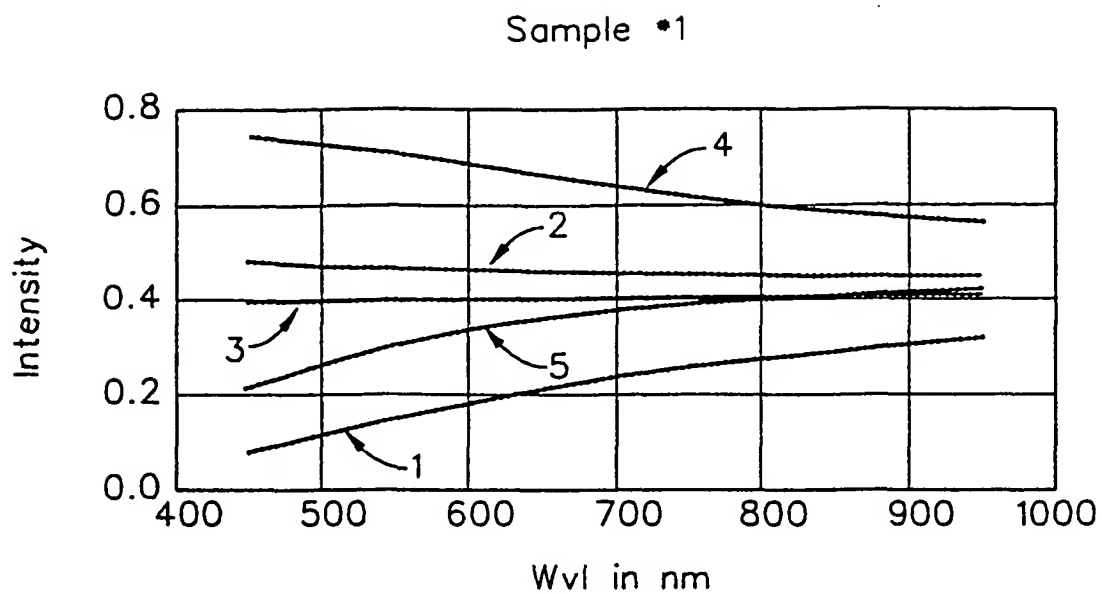


FIG. 5

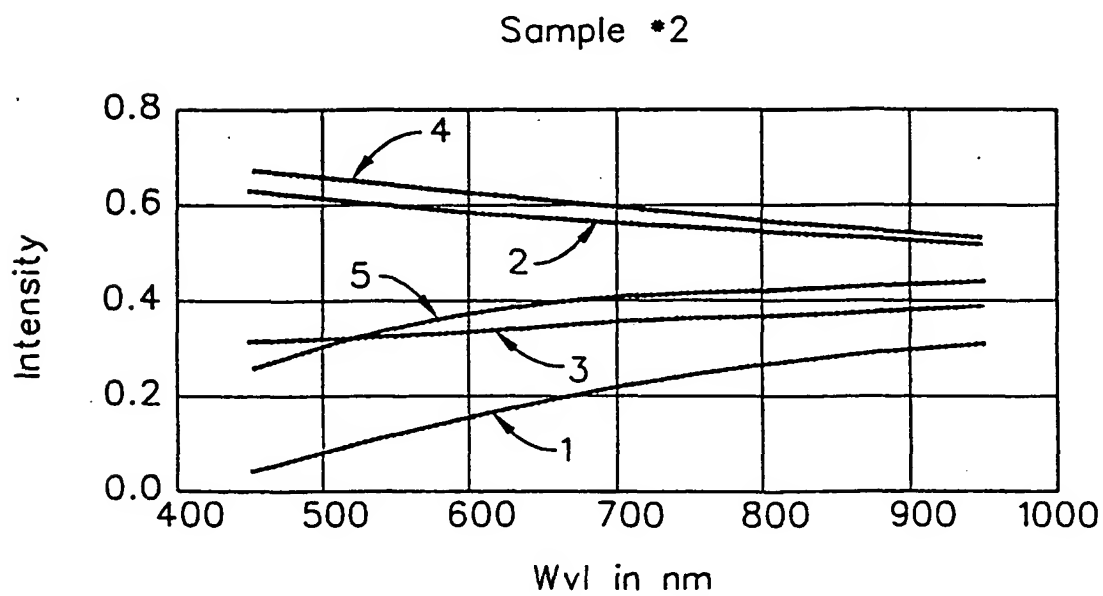


FIG. 6

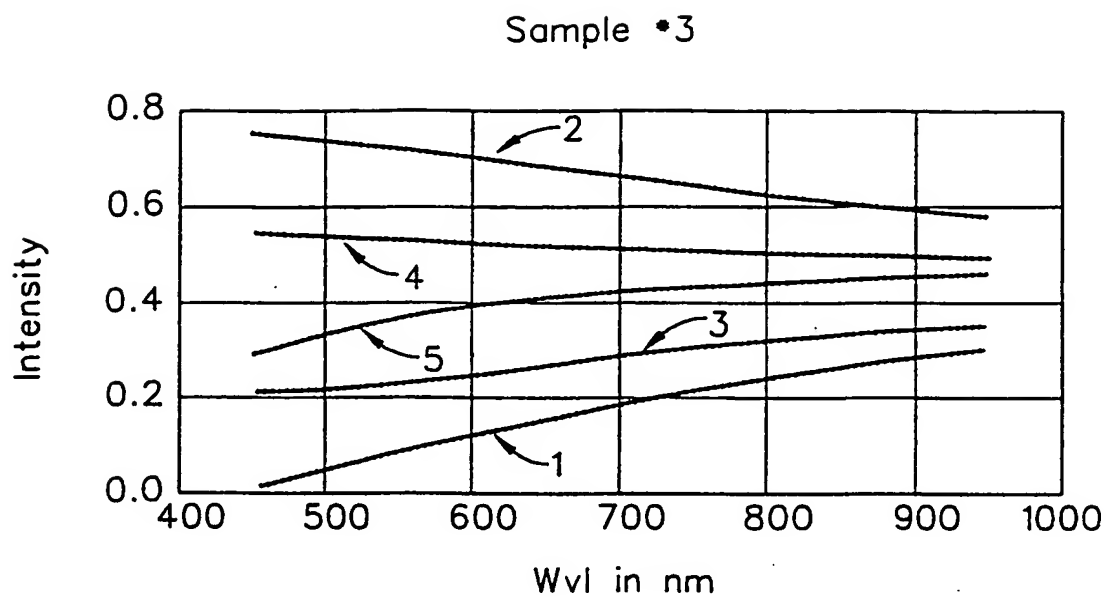


FIG. 7

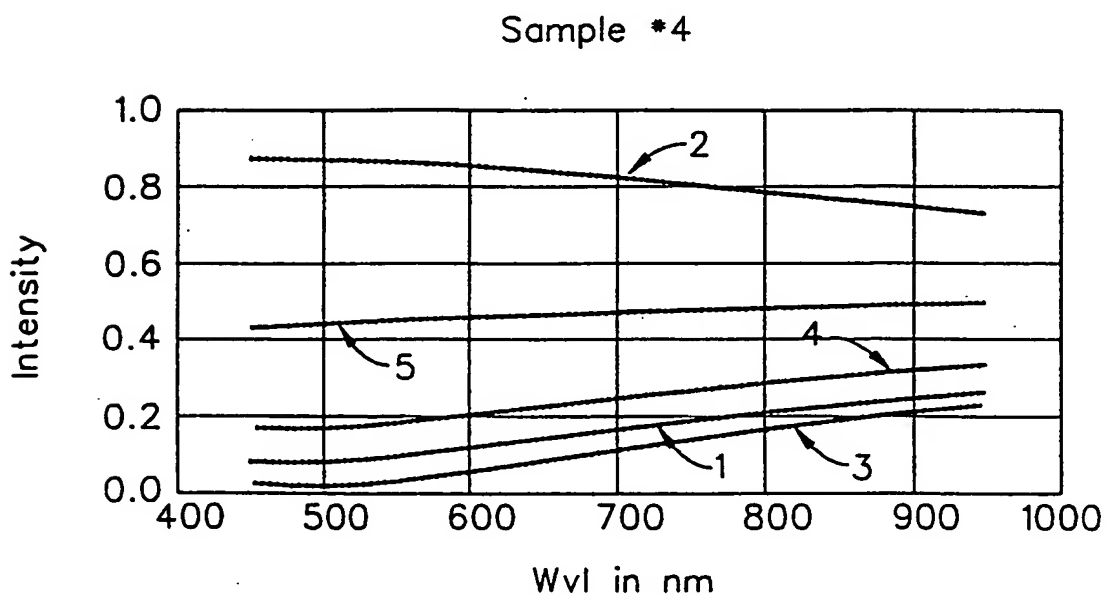


FIG. 8

Sample \*5

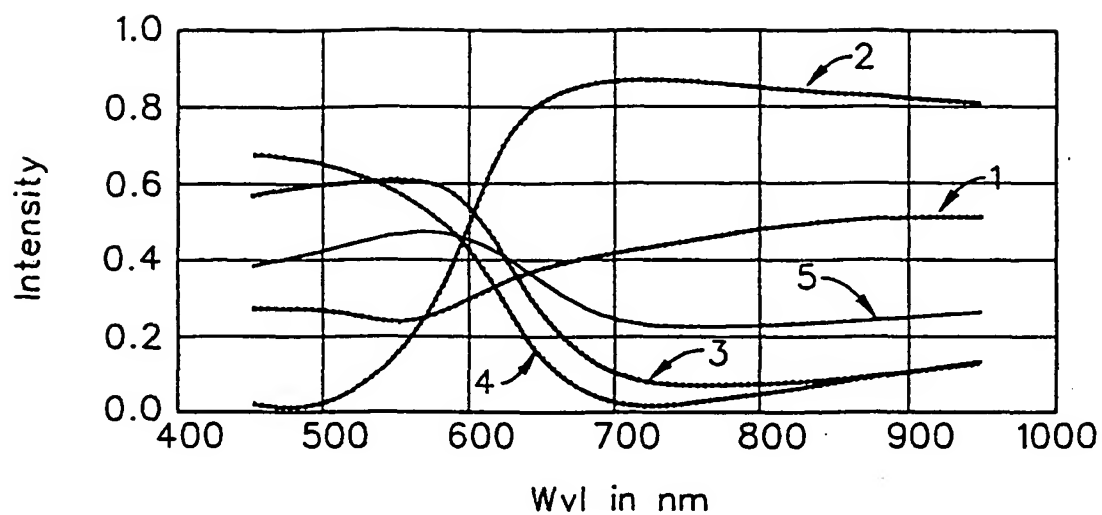


FIG. 9

Sample \*6

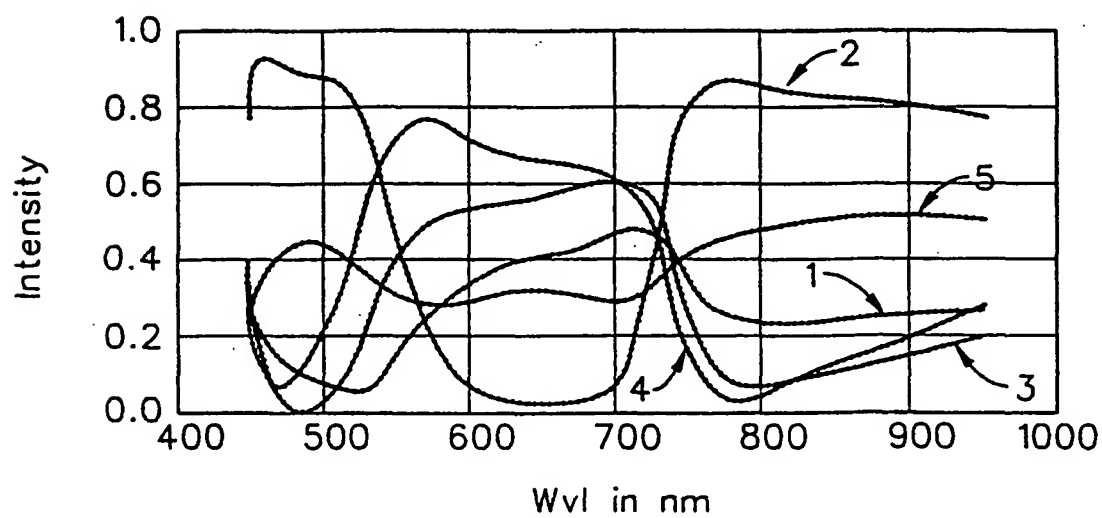


FIG. 11

Sample 7

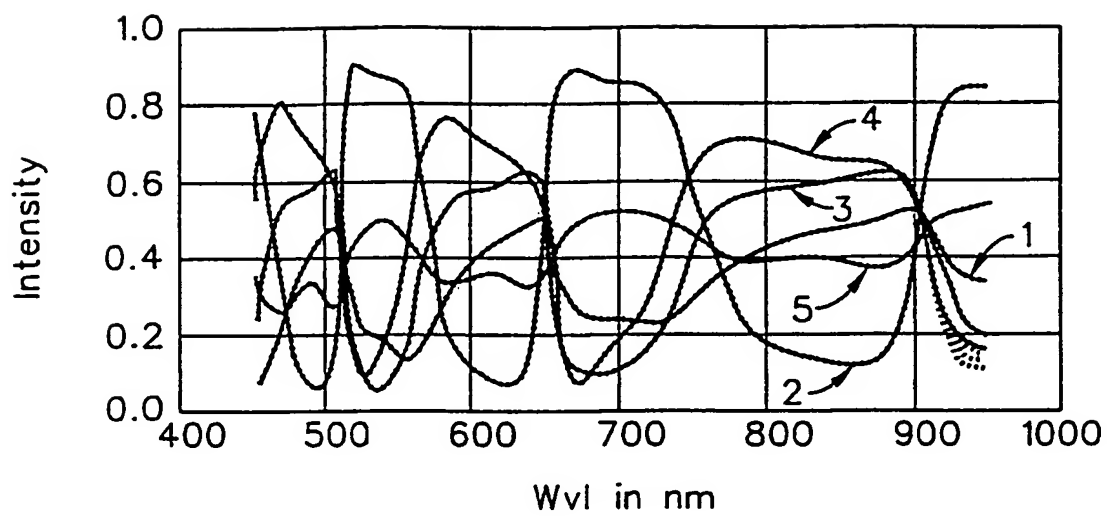


FIG. 10

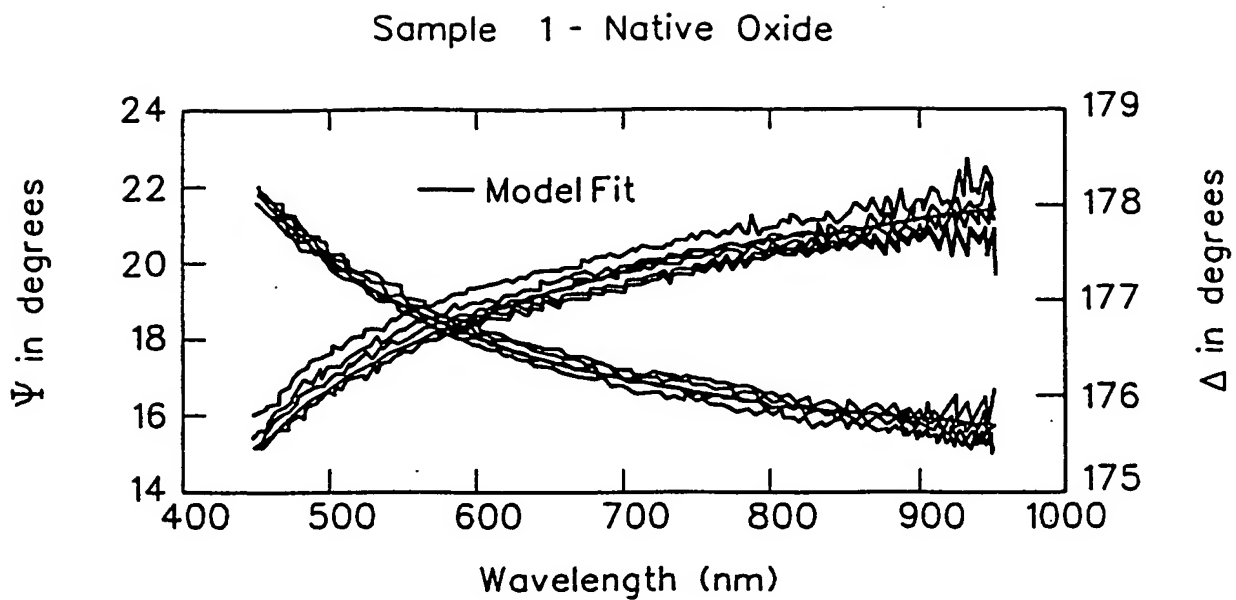


FIG. 12

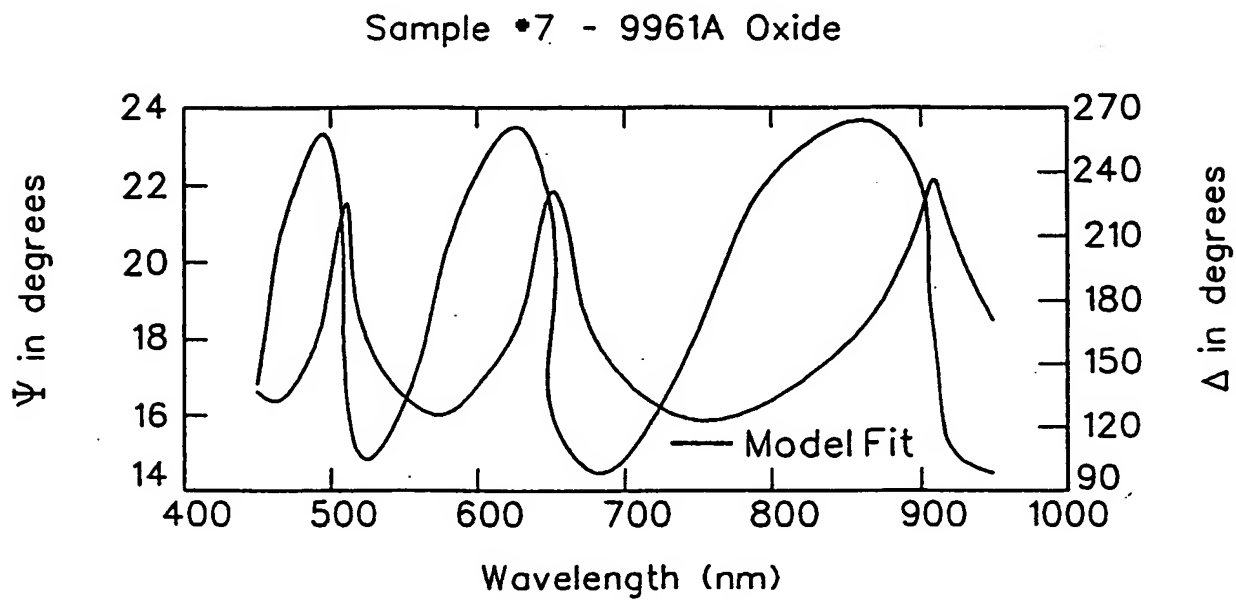


FIG. 13